


seawater intrusion, San Joaquin River inflow containing agricultural drainage, and, possibly, connate groundwater (i.e., water trapped within sedimentary rocks that is often highly mineralized). It is uncertain whether there are native bromide sources in the San Joaquin Valley, or whether bromide found in the River is a result of concentration of bromides in agricultural irrigation water taken from the Delta and returned to the Delta through the River. Bromide has been measured by the MWQI program since January 1990.

Total and Dissolved Organic Carbon

Organic materials enter the water from the following sources in the Delta, in decreasing order of amounts:

- natural materials, vegetation, and organics soils;
- agriculture, as vegetative organics in drainage;
- urban runoff;
- municipal and industrial wastewater discharges;
- pesticides and herbicides.



Organic carbon is one of the primary variables that influence the potential for DBP formation. Applicable drinking water standards are based on TOC concentrations; however, most of the available data for the Delta have focused on DOC. In general, most TOC in Delta waters is present in the dissolved form. The most common DBP is THM compounds formed during chlorination of DOC in drinking water supplies. These carcinogenic substances include chloroform and bromoform. MWQI studies have documented that Delta exports contain relatively high concentrations of DOC. Agricultural drainage discharges that contain natural organic matter from decomposing

peat soil and crop residues contribute approximately 20 percent of the DOC exports from the Delta (California Department of Water Resources, 1994b). Additionally, DOC is carried into the Delta from upstream inflows. Minimizing DOC concentrations in source waters is a major water quality goal for drinking water uses to meet new EPA regulations for DBPs. Utilities must undertake efforts to control organic carbon in their source water if TOC exceeds 2 mg/l at the water intake or to modify disinfection methods.

Dissolved Oxygen

Dissolved oxygen (DO) concentrations serve as indicators of the balance between sources of oxygen (e.g., aeration and photosynthesis and oxygen consumption (through decay and respiration processes). The capacity of water to hold dissolved oxygen decreases with increasing temperature. DO concentrations and often vary with the cycle of daily photosynthetic activity of algae and plants. Historically, significantly reduced DO concentrations in Delta channels are not generally considered a problem have not occurred, except occasionally in the waterways around near Stockton and in some dead-end sloughs. Water with high biological oxygen demands (BOD) may have decreased levels of DO when wastes are discharged into them.

Nutrients

Nitrogen and phosphorous are the two nutrients which most often limit algal growth at low concentrations and trigger algal growth at elevated concentrations. Generally, in the presence of sufficient light and elevated temperatures, algal productivity increases as nutrient concentrations increase.